

CLAIMS

1. A manufacturing method of a semiconductor device comprising:
forming a plurality of circuit portions each having a modulation circuit, a
5 demodulation circuit, and a logic circuit over an insulating substrate by a first exposure
means; and
forming a plurality of different memory circuits over the substrate by a
second exposure means.
- 10 2. A manufacturing method of a semiconductor device comprising:
forming an object to be processed over an insulating substrate;
applying a photoresist on the object;
exposing the photoresist by a first exposure means;
exposing the photoresist by a second exposure means;
15 developing the photoresist exposed by the first exposure means and the
second exposure means; and
etching the object by using the developed photoresist to form a plurality of
first patterns of circuit portions each having a modulation circuit, a demodulation
circuit, and a logic circuit and a plurality of second patterns of different memory
20 circuits.
3. A manufacturing method of a semiconductor device comprising:
forming an object to be processed over an insulating substrate;
applying a first photoresist on the object;
25 exposing the first photoresist by a first exposure means;
developing the exposed first photoresist;
etching the object by using the developed first photoresist to form a
plurality of first patterns of circuit portions each having a modulation circuit, a
demodulation circuit, and a logic circuit;
30 applying a second photoresist on the object;

exposing the second photoresist by a second exposure means;
developing the exposed second photoresist; and
etching the object by using the developed second photoresist to form a
plurality of second patterns of different memory circuits.

5

4. A manufacturing method of a semiconductor device comprising:
forming an object to be processed over an insulating substrate;
applying a photoresist on the object;
exposing the photoresist by a first exposure means;
10 exposing the photoresist by a second exposure means;
developing the photoresist exposed by the first exposure means and the
second exposure means; and
etching the object by using the developed photoresist to form a plurality of
first patterns of first circuit portions and a plurality of second patterns of different
15 second circuit portions,
wherein the second exposure means can change the contents of exposure
depending on program.

20

5. A manufacturing method of a semiconductor device comprising:
forming an object to be processed over an insulating substrate;
applying a photoresist on the object;
exposing the photoresist by a first exposure means;
exposing the photoresist by a second exposure means;
developing the photoresist exposed by the first exposure means and the
25 second exposure means; and
etching the object by using the developed photoresist to form a plurality of
first patterns of first circuit portions and a plurality of second patterns of different
second circuit portions,
wherein different data is stored in each of the second circuit portions.

30

6. The manufacturing method of a semiconductor device according to any one of claims 1 to 3, wherein the memory circuit is a mask ROM.

7. The manufacturing method of a semiconductor device according to claim
5 4 or 5, wherein the second circuit portion is a mask ROM.

8. The manufacturing method of a semiconductor device according to any one of claims 1 to 3, wherein the difference among the plurality of memory circuits is data stored therein.

10

9. The manufacturing method of a semiconductor device according to claim 4, wherein the difference among the plurality of second circuit portions is data stored therein.

15

10. The manufacturing method of a semiconductor device according to any one of claims 1 to 3 and 5, wherein the second exposure means can change the contents of exposure depending on program.

11. The manufacturing method of a semiconductor device according to any
20 one of claims 1 to 5, wherein the first exposure means is an exposure means using a mirror projection exposure system.

12. The manufacturing method of a semiconductor device according to any one of claims 1 to 5, wherein the first exposure means is an exposure means using a
25 step and repeat exposure system.

13. The manufacturing method of a semiconductor device according to any one of claims 1 to 5, wherein the first exposure means is an exposure means using a step and scan exposure system.

30

14. The manufacturing method of a semiconductor device according to any one of claims 1 to 5, wherein the second exposure means is an exposure means using an electron beam exposure system.

5 15. The manufacturing method of a semiconductor device according to any one of claims 1 to 5, wherein the second exposure means is an exposure means using a laser exposure system.

10 16. The manufacturing method of a semiconductor device according to any one of claims 1 to 5, wherein a portion exposed by the second exposure means is a contact hole.

15 17. The manufacturing method of a semiconductor device according to any one of claims 1 to 5, wherein the insulating substrate is one selected from the group consisting of a glass substrate, a plastic substrate, and a film insulator.

18. An IC card, an IC tag, an RFID, a transponder, a bill, a security, a passport, an electronic apparatus, a bag, and a garment each comprising a semiconductor device manufactured by the manufacturing method according to any
20 one of claims 1 to 5.

19. The manufacturing method of a semiconductor device according to claim 4 or 5, wherein each of the first circuit portions comprises a modulation circuit, a demodulation circuit, and a logic circuit.

25

20. The manufacturing method of a semiconductor device according to claim 4 or 5, wherein each of the second circuit portions comprises different memory circuits.